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CASES ILLUSTRATING
THE
DIRECT ACTION OF REMEDIES
ON THE
NERVOUS SYSTEM.

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[From May No. Richmond and Louisville Medical Journal.]



CASE I.—This case occurred last Summer, and as I kept no notes, I must depend on the report of my friend, Dr. S. P. Church, who called me in consultation, and with whom I saw the patient, day after day, as long as the danger was imminent.

The age of the child was fifteen months. Some weeks before the recent severe illness, she had had measles, which had been prevailing in New York in a severe, and in some cases, a fatal form. The prominent symptoms, says Dr. Church, were cough, high fever, rapid respiration (ranging at one time to 80); pulse 125 to 135 (at one time 180); head hot; great restlessness. The child continued to grow gradually worse, and a thin, greenish diarrhoea was added to the other symptoms. I first saw the little patient on the 2d of April, six days after Dr. Church was called in. The child had been in an unconscious state for some time previous to my visit; possibly a couple of days or more. The pupils were much contracted, although no opiate, in sufficient dose to produce such a condi-

tion, had been given; there was evidently no vision; pulse 130, and very feeble; respiration frequent; temperature 105° in axilla. Swallowed fluids with avidity, and of course took a sufficiency of nourishment. Bromide of potassium in doses of three grains every two hours (thirty-six grains in twenty-four hours) was ordered, in addition to the remedies already prescribed. The next day, April 3d, at our consultation, matters had not mended, and I advised the attending physician to abandon the routine treatment of such cases, and try remedies which would act directly on the nerves supplying the capillaries of the brain, thus causing their contraction and a diminished supply of blood. Accordingly, we ordered the bromide to be continued as before; Squib's fluid extract of ergot in m. ijss. every hour, with one-quarter of a minim of tincture of belladonna every hour. The latter to be continued until a manifest dilatation of the pupil was observed. At our next visit, April 4th, the child's symptoms were all decidedly improved. The father, a very intelligent gentleman, had watched the effect of the belladonna, and observed that as soon as dilatation of the pupil was decided, the child seemed to manifest some consciousness, and became more quiet; the pulse was less frequent, and fuller; the temperature 103 ; the child less restless, and the diarrhœa checked. The belladonna was now directed to be given *pro re nata*, so as to maintain the pupil in a natural state; the other remedies to be continued as before. I do not endeavor to give the daily details of the case, as the progress was perfectly uniform; the intelligence of the child, from its dawn, the first morning after commencing the treatment, continued to exhibit slow but gradual and progressive development from day to day, first noticing familiar objects, in a languid way, then raising her little hands to seize them, and letting them fall from sheer weakness. The temperature and pulse continued to improve *pari passu*, and the heat of head diminished; the diarrhœa did not return, and the discharges assumed a healthy character within twenty-four hours after the treatment was commenced. The belladonna was continued at inter-

vals of two, three or four hours, for four days; the ergot was continued in the same doses, and at the same intervals as at first, for five days; as was also the bromide. At this time there was an apparent relapse; this was the information I got from the parents on the morning of my sixth visit. On examining the child, I found that the restlessness had increased; the pulse had run up to 120 and 130, was decidedly more feeble; child more languid, but perfectly conscious; temperature below 98°; head preternaturally cold. The parents, under the impression that the small amount of stimulant, which had been given for two or three days, was doing harm, had intermitted it during the night. It was evident that the constricting effect of the remedies on the capillaries had been pushed too far, and the stimulant not far enough. The former were all stopped at once, and the stimulant decidedly increased, and codeia was ordered to allay restlessness. The next day the child was like a different patient. The cough, which had all along, indeed ever since the attack of measles, been more or less troublesome, was considerably allayed by the codeia; and in addition, we now directed cod-liver oil in emulsion, and the child continued to improve gradually until the cough disappeared, and Dr. Church now writes that she is entirely well.

I think the above case needs no comment, I would only call attention to the fact that the diarrhœa was checked, and the characteristic greenish evacuations converted into healthy very promptly, after failure of the ordinary remedies which had been employed. This was no accident, I have observed it before in treating cases for fibrous tumor and other diseases with ergot. And we know that belladonna also has the effect of relieving both diarrhœa and constipation; that is by restoring a healthy tone to the capillary circulation of the intestinal canal. Bromide of potassium is also relied upon by some physicians to fulfill the same indications.

CASE II.—While upon this subject of the action of remedies on the nervous system, I am induced to present another case in illustration, but of a totally different character in every

respect, which fell under my care about the same time—that is, in the early part of May last. The subject was the widow of a well-known physician of New York, not long deceased. She is nearly eighty years of age, usually in good health, but has had several severe attacks of disease, one affecting the chest, a year ago, of an alarming character, for which she was attended by her physician, my friend, Dr. Leaming. She had been ailing slightly with a cold, and some cough; when, one day, on returning from a ride, during which the weather had turned colder, was attacked with sudden dyspnoea; and her daughters noticed that her finger-nails turned blue, and her lips and face became also somewhat livid. I was immediately sent for, but did not arrive until 9 o'clock in the evening, when another messenger had been dispatched for me. On my arrival, I found that the very urgent symptoms had temporarily subsided. But it was evident that I had to deal with a case of general capillary bronchitis, and that some remedy which would afford speedy relief was absolutely necessary. Only one remedy presented itself to my mind as likely to meet the emergency, and it is probably the last one which would have presented itself to the minds of most physicians of the present day. I placed thirty grains of *calomel* on her tongue and let her wash it down with a draught of cold water. She was taking a very mild expectorant mixture of muriate of ammonia and ipecac, which had been prescribed for her grandchild, three years of age; and I let her continue this as a placebo. The next morning I was at the house as early as possible; found that, at 12 o'clock, two hours after taking the dose, she fell into a quiet slumber, and slept for four hours. The medicine then operated three or four times very gently, the evacuations being of a normal appearance. She was greatly relieved, and although she was confined to the bed for several days, she had no recurrence of any serious symptoms, and took very simple remedies.

To those whose attention has never been called to the sedative action of calomel in disease, this practice must seem extraordinary. But I hope that enough has been said on the subject

within the past few years to convince some, at least, that the action of this potent remedy is totally different on the nervous system, according to the mode in which it is prescribed. Doses of one grain every hour in this case, or a dose of five or ten grains would undoubtedly have disturbed the stomach and alimentary canal unpleasantly, and have aggravated the disease by adding other sources of irritation. But, like the remedies prescribed in the preceding case, it acted through the ganglionic system on the minute vessels of the parenchyma of the lungs, checking the inflammation at once, and probably saving the patient's life. For no more dangerous form of disease can attack a very old or a very young subject. So it acts in Asiatic cholera, in dysentery in its worst or epidemic form, in membranous croup, and many diseases in which danger is imminent, and the number of available resources from which we may choose, are very few indeed. The first physician whom I have ever known to prescribe the sedative dose of calomel in these desperate conditions of thoracic disease, was Dr. Cammann, the proposer of the binaural stethoscope. Dr. Leaming, once his assistant, followed his treatment in some cases; and in the case of this very patient, as she subsequently informed me, relieved her almost like magic, as she expressed it, with calomel placed on her tongue; how much, I know not; but certainly a sedative dose. In dysentery, in cholera, in croup, the remedy acts too quickly (in fifteen minutes sometimes) to be explained through any other medium than a direct influence on the nervous system.

I present the three following cases as additional evidence of this action, and of the correctness of the views on this subject expressed in part first, of this paper. I am indebted to Dr. J. R. Leaming for the notes of the first two.

CASE III.—Saw this case in consultation; daughter of Mr. P.; four years and a half old; had been ill one day. May 18, 1872, 3 P. M., found her moaning, apparently suffering great pain; head moving up and down, and from side to side; pupils dilated; apparently in great pain; seemed to be unconscious;

could probably neither see nor hear; pulse very frequent. We diagnosed cerebro-spinal meningitis. Twelve grains of calomel were placed upon her tongue. 9:30, motion of head much less; answers when spoken to; pulse less frequent; temperature lower. There was some stiffness of the back of the neck; an approach to opisthotonos. The characteristic eruption fully developed. From this time improvement was rapid, and convalescence established.

The above particulars were given from memory, and some months after the occurrence of the case.

CASE IV.—Saw Mr. V. B., in consultation with Dr. Kissam, of New York, December 13, 1872; had previously had two attacks of cerebral compression, with an interval of several years. At this time, he again became unconscious, and fell. After a couple of days, signs of thoracic inflammation became manifest. It was at this juncture I was called in. Breathing oppressed; pulse 60 and feeble. Plastic râles over lower part of both lungs, mostly in right side; pericardial pleural râles could be distinguished. Small doses of blue mass and extract of conium were prescribed, with external stimulating applications.

December 14th.—Patient apparently better.

December 15th.—Symptoms much worse; urgent dyspnoea. It was found that the plastic interpleural exudation* had increased, with the addition of pericardial friction, to and fro movement. It was concluded, in consultation, to do what was not done at first, on account of the weakness and slowness of the pulse—that is, to give him a sedative dose of calomel. Consequently, thirty grains were placed upon his tongue. The next day the pleural râles were greatly diminished, and the pericardial friction murmur had disappeared. Pulse stronger. In the course of two or three days the plastic râles had disappeared, and, with the exception of the cerebral trouble, the patient had recovered.

* Dr. Leaming, as many of the Profession are aware, regards the râles, attributed by most of us to mingled air and moisture within the lungs, to plastic deposit on the pleuræ.

CASE V.—*Pneumonia Apparently Arrested by a Sedative Dose of Calomel.*—D. M., the father of the child, whose history will presently be related, aged forty, while running about in the rain to get necessary articles for his sick child, took cold, had a violent chill November 29, 1874, followed by fever, severe pain in the right side and shoulder, with severe “stitch” in breathing, also pains “all over,” and cough. At the date of my visit, 30th, had not noticed his sputa. On physical examination, find marked dullness, right side, posteriorly over middle and lower lobe; respiratory murmur distant and muffled; no râles; temperature $100\frac{1}{2}^{\circ}$; pulse 90. Appears to be suffering a great deal. Diagnosis—pleuro-pneumonia, perhaps accompanied by intermittent fever, as his family have been much affected by it. Gave 30 grains of calomel on the tongue, and 8 grains of quinine to be taken in an hour, and the same dose six hours after.

December 1st.—Rather better, except headache; temperature and pulse the same; physical signs just the same; but expectorates well-marked rusty sputa. Says he felt better very soon after taking the calomel, but not so well after the other powders. The calomel commenced acting twenty-five minutes after it was taken, and operated four times mildly. No disturbance of bowels since; evacuations very dark. He vomited slightly once after the second quinine powder, eight hours after the calomel. To take ant. tart., gr. 1-16, q. 2 h.; small doses of morphine, if needed (gr. 1-20); turpentine stupes to right side of chest.

December 8th.—Have not been able to see the patient until to-day. Four days since, he sent a message to the effect that he felt well, but had a troublesome cough. He was ordered “Cammann’s mixture,” a tonic expectorant. To-day, find him looking and feeling well enough to go out. Cough much better. Says he noticed the peculiarity of his sputa for two or three days, and that it gradually disappeared. There is now only a shade of dullness over the lower lobe. The respiratory murmur is good, but still “muffled,” as if from pleuritic fibrinous effusion; no râles.

December 10th.—Patient came up to the village (five miles) to-day. Feels well, but is weak; is, however, rapidly gaining strength as he exercises. Examined carefully by Dr. J. C. Young and myself; find the same physical signs.

In this case the pneumonia was probably central, and evidently did not pass through its ordinary stages.

CASE VI.—*Convulsions in Children Threatening Immediate Death Treated by the Hypodermic Injection of Morphia.*—A girl, aged three years, child of D. M., seized suddenly with convulsions November 28th, at 1 P. M. I saw the child at 5 P. M. The convulsions have continued uninterrupted and severe. They affected first one side, then the other, then both at once. Pupils now widely dilated and immovable, pulse feeble and irregular, estimated at 180; mucous râles in throat, and frothy mucus flowing from nose occasionally; respiration about 50. The head was thrown back, the spine in a state of opisthotonos, the bowels greatly distended with gas. On Thanksgiving day she had eaten freely of nuts, but had had febrile symptoms every afternoon for several days previously. The mother, the day before the attack, had given a dose of oil, and the child passed a quantity of fragments of chestnuts this morning. The convulsions were, therefore, probably due to abdominal irritation, and perhaps also to malaria. No time was to be lost. I immediately gave two minims and a half of a solution of morphia and atropia, and immediately followed it by chloroform inhalation. Within fifteen minutes the convulsions had ceased; but, for a few moments, the mucus flowed so freely from both nose and mouth, that the issue appeared doubtful. By turning her on her side, she soon breathed easier, and so did I. The pupils contracted down in a few minutes to less than their normal size, and the face was much flushed. The pulse improved, and the respirations were 44. I then injected about a quart of warm water into the bowels, and as no response followed, and having no long tube at hand, I introduced a long female silver catheter, and a large quantity of fluid and gas were evacuated. I left this *in situ*, and within half an

hour the belly was very much reduced in size. I then applied flannel turpentine stupes to the whole abdomen and epigastrium; and, as soon as I could get the teeth apart with the handle of a tooth-brush, placed upon the tongue a few grains of calomel rubbed up with sugar ("saccharated calomel"). The temperature was now noted at 102° . In half an hour, the carpo-pedal spasm was noticed returning, and the limbs stiffening occasionally, and the opisthotonos increasing. I therefore injected another minim of the solution, making in all 1-9th of a grain of morphia and 1-180th of a grain of atropia. In a few minutes, the thumb and fingers, from being clenched into the palm, became well extended, but soon fell into a natural position and remained so. The opisthotonos was not entirely relieved. Cold applications were kept to the head, which was hot, but not excessively so. Pulse pretty weak. Injected, per rectum, three drachms of brandy in warm water, and directed this to be repeated every two hours until the pulse improved. No attempt to arouse the child to consciousness was allowed, as it was important to avoid all sources of irritation.

November 29th.—Child able to be up about the floor, but feeble. Seen after my departure, and about three hours after I first saw her, she called "papa!" but did not open her eyes. An hour later, she became conscious, and has remained in a natural condition since, and able to eat, though vomiting now and then. The medicine operated three times. The opisthotonos continued for about an hour after my departure.

November 30th.—Has undoubted malarial fever. R—Quin. sulph., gr. iij., q. 4 h. From this time she gradually regained her normal condition.

In part first, I gave the particulars of a remarkable case of convulsions caused by abdominal irritation, extracted from a letter from the parent, and published in the "Boston Medical and Surgical Journal." The case has since been published in full in the "London Medical Times and Gazette," November 21st, by Sir John Rose Cormack, with "Remarks on the Treatment of Infantile Convulsions of Reflex Origin." He says, in con-

clusion, "the quantity of morphia which can be safely injected into the cellular tissue of children, I am unable to state, either from my own experience or from inquiries addressed by me to several friends in large practice. The subject requires the careful clinical study of several competent observers." "If the hypodermic method of employing morphia can be formulated for safe use in the treatment of convulsions of children, it is obviously preferable on account of its much greater certainty and rapidity of effect."

This is only the third case in which I have used anodynes hypodermically in young children; once in a hopeless case of tubercular meningitis; once in poisoning by stramonium, with prompt relief. But, as the dose can just as well be graduated to the child's age, using a fraction of a drop, if necessary, and as the danger of "cumulative" action is not so great in this method as in the enemata per rectum, when large doses are required, I shall hereafter resort to the former in preference to the latter method.

Sir John, in remarking on the many important points of his case, says: "The great clinical interest of this case in respect of treatment belongs to the large amount of hydrochlorate of morphia which was hypodermically injected, and the signal success which attended the practice. The fifth of a British grain is a large amount of the salt to be injected into the cellular tissue of a boy of seven years of age. For this reason I have been careful to describe with minuteness the exact condition of the patient before, at, and after the injection. The result of the experiment made in this case militates against the opinion of Dr. Charles West, of London, so far as a single case can be allowed to weigh against a conclusion arrived at by one of the most experienced and accomplished physicians of the day."

In my case, the amount of morphia in proportion to age was greater.

Cases Illustrating the Effects of Electricity in the Treatment of Disease.—There has been so much skepticism exhibited as

to the alleged extraordinary, not to say miraculous, effects of electricity, when systematically and scientifically applied, that it may not prove uninteresting or un instructive to the general practitioner, who has probably not had the time or opportunity to satisfy himself, by direct experiment, of the correctness of these reports, to give a few clinical histories, coming as they do from one who has no claim to be called a specialist, and who has not very long ago emerged from the domain of skepticism himself.

Some of the most beneficial results of electricity were exhibited in the prompt relief of vomiting from various causes, but these cases, originally intended to form a part of the present series, were published, at the request of the editor, in the second number of the "Archives of Electrology and Neurology," just issued from the Press.

CASE VII.—This patient has presented for several years a series of most remarkable and anomalous nervous symptoms. She is thirty years of age, very intelligent, and remarkably well educated. Among other neuralgic symptoms, she has had for several years severe pains in the knees without any symptom of inflammation. Latterly, she has become feeble and anæmic in consequence of an attack of fever in the South. Besides the pains, for which I was especially called in, she had various symptoms of cerebral and spinal anæmia, for which various remedies had been prescribed in vain. She had nausea and vomiting of her meals. The Faradaic current from a Gaiffe's sulphate of mercury battery was applied every night to the knees, and also from the upper part of the spine to the epigastrium, to relieve the dyspeptic symptoms and to act as a general tonic. In conjunction with pepsin and the acid phosphate, the electricity soon relieved this trouble. The pain in the knees was promptly and almost entirely relieved temporarily, so that she could sleep with the aid of ten grains of chloral, sometimes repeated. The pain recurred each afternoon, but always in a mitigated degree; and, after eight or ten sésances, disappeared altogether. The galvanic or constant cur-

rent from twenty-four cells was used twice, but the other battery was more effectual.

The three following cases illustrate the rapidly beneficial effect of electricity in paralysis of sensation and motion when applied early in the disease:

CASE VIII.—Mrs. S. D. M., a lady of delicate constitution and numerous ailments; lately called my attention to a paralysis of the right thumb, affecting the muscles and integument as far as the wrist. It had developed slowly for several months, and was now rendering her thumb comparatively useless; that is, she could not feel a small object between her thumb and finger, and could with difficulty hold her needle in sewing. One application of the Faradaic current from Gaiffe's little apparatus relieved her very much, and two more to such an extent that she thinks further treatment unnecessary.

CASE IX.—James C., aged forty-eight, applied to Dr. Murdock September 13, 1874. Had had a severe attack of intermittent fever, and awoke one morning with complete paralysis of sensation affecting only the distal half of the thumb, index, and middle fingers of the right hand. Had not had anything to do with lead. Dr. M. applied the galvanic current from twenty-four cells with no effect. On the 14th, I tried Gaiffe's battery, but, with its full power and the wire brush, could produce no sensation in the affected parts. With a Kidder battery and the brush, produced a slight effect, but none with wet electrodes. To-night, 15th, he is better; very *slight* sensation. Applied Gaiffe's battery with brush, but he could only bear the full strength in the pulps of the fingers; that is, where the paralysis had been most intense. After a twenty minutes' séance, substituted the wet electrodes, which produced soon a decided effect; and after a séance of three-quarters of an hour, he was very much better, the sensation being almost normal up to the first phalanx. A very slight numbness remained for some days, but yielded to three more short applications.

CASE X.—P. M., aged forty, a stout and remarkably healthy plumber, awakened a week ago and found rather more than the

distal half of the index, middle, and ring fingers of the right hand were numb. He got up and rubbed them with kerosene, but they got no better. They remain in precisely the same condition now. There is also slight paralysis of motion, which effects the muscles of the forearm to some extent. Use of the hammer tires the hand very soon. He is undoubtedly poisoned with lead, from his own account. No line on the gums.

January 9th.—Tried galvanic current with interruptions, twenty-four cells. No impression without the interruptions. Séance half an hour.

January 10th.—Patient states that the hand seems stronger; that the fingers feel more natural. Applied the galvanic or constant current with slow interruptions, twenty-four cells, half an hour. Muscles respond much more readily to the current. Afterwards applied the Faradaic current, which now, as it had not done before, acted well on the muscles.

January 11th.—Repeat Faradization.

January 15th.—Application yesterday and to-day. Paralysis has almost entirely disappeared, although he has worked hard.

January 17th.—Has now the full strength of his hand, and only feels a slight numbness in the palp of the index finger.

January 19th.—Almost well; apply battery.

January 21st.—All right.

The following cases illustrate the effect of the galvanic, or as it is sometimes, not very accurately, called the constant current:

CASE XI.—*Obstinate Insomnia—Failure of all Ordinary Remedies—Prompt Relief by Galvanism.*—Mrs. E. P., aged thirty-five, feeble, nervous, neuralgic, and obstinately sleepless, with occasional hysterical attacks; has also a painful, probably neurotic trouble in one knee-joint, for which various treatment has been tried. All the various anodyne mixtures have caused nausea or hysteria. A teaspoonful of Hoffman's anodyne caused a violent hysterical attack the moment it was swallowed. The only sleep she gets is when she takes a large draught of brandy at bedtime.

December 28, 1873.—Applied the galvanic current this evening to the knee-joint for the pain, and from the nape of the neck to epigastrium, wet electrodes for the insomnia, having repeatedly noticed the marked drowsiness induced when applying the current for other purposes, and also from the Faradaic current. A metallic taste and a sense of choking was produced by six or eight cells of a Stöhrer's battery.

December 29th.—Did not sleep any better; but feels decidedly stronger; knee not so well. Applied the galvanic current to knee, also to neck, back and front, and to vertex, keeping one electrode always on the epigastrium.

December 30th.—Applied again, with an application of Faradization to knee. The brandy has been discontinued for two nights. She slept better last night, and expresses herself as much better in every way since the applications.

December 31st.—Slept soundly all night, and after having been aroused at 7 A. M., went into a sound sleep again; the knee trouble rather increases.

January 10, 1874.—Has slept soundly and refreshingly every night without a resort to any stimulant. Has improved remarkably in strength; much less nervous.

January 12th.—Was obliged to apply an immovable apparatus to the affected limb, notwithstanding the inconvenience of which, the patient's sleep was undisturbed.

CASE XII.—This was a case of obstinate epilepsy, and is only alluded to on account of the influence of the galvanic current on his sleeplessness. It was applied every evening, and invariably produced a quiet sleep, whereas his wife was constantly disturbed by his restlessness previously. It also had the singular effect of causing an evacuation of the bowels within half an hour in addition to his usual morning action.

CASE XIII.—In this case the galvanic current, applied for the relief of uterine pains, produced marked drowsiness. On one occasion, the first, to such an extent as to alarm her husband seriously. He aroused her with difficulty and gave

brandy. She had never exhibited any nervous or hysterical symptoms.

CASE XIV.—This is my own case. I had suffered for several winters with chilblains affecting the toes of one foot; and last winter they assumed the usual purplish-red appearance, with the accompanying horrible sensations. I applied the galvanic current for ten minutes, and had no trouble the remainder of the winter. Some very successful cases of this kind are related in an Italian journal ("Gaz. Med. Ital. Prov. Venete") by Dr. Santopadre. He used Faradaic electricity. The chilblains are, of course, due to vaso-motor paralysis, and it is not strange that electricity should be the proper means of relief, since the effect of the galvanic current is to contract the minute vessels.

CASE XV.—Miss G., aged eighteen, the subject of leucorrhœa and severe dysmenorrhœa, had been on tonics and other treatment with considerable relief to all her symptoms, except the dysmenorrhœa, and an almost constant headache of a severe character. Applied the galvanic current, from eight to ten cells, the most she could bear, to the lower spine, on alternate days. Five applications. After the third, was relieved of all pain. Has continued free from pain ever since. Her dysmenorrhœa is also much better.

CASE XVI.—M. A. B., a girl twenty-six years of age, the subject of repeated attacks of malarial fever, was seized January 19, 1874, with a severe pain extending from the right temple across the ramus of the jaw to anterior edge of sternomastoid. Applied the galvanic current to seat of pain for seven minutes, when she declared that the pain was all gone.

January 20th.—Said the pain recurred at the end of four hours for a short time, and that she had felt none since.

CASE XVII.—V. McCl., a delicate young girl, always complaining of dyspeptic and anemic symptoms, and much reduced from inability to eat proper food, applied to me for a swelling in the left arm-pit, which had been there for over two years, and had given her pain for several months, and latterly

to such an extent that she can not sleep, and can not even bear to let the arm press against it, whether lying or sitting. The pain has gradually extended down the arm and forearm to the hand, and there is a hard swelling along the radius almost like a periostitis. Sometimes the pain extends to the pectoral muscle and above the clavicle. It is hard, and has the feel of an indurated and hypertrophied axillary gland, but is more irregular, as if two or three were welded together. Handling is quite painful.

Commenced to-day, January 22, 1874, the application of the galvanic current, one electrode on the tumor, the other moving from the adjacent mamma to a little above it; also from the sixth cervical vertebra to arm and forearm for a few minutes. The pain in both localities entirely relieved in thirty minutes.

January 25th.—No shooting pains in tumor, and no recurrence of arm pain; tumor still painful; repeat.

January 27th.—No pain anywhere, and very little soreness in the tumor. No trouble in sleeping in any position.

January 29th.—Free from pain or soreness; the tumor seems softer. She thinks it is decidedly smaller. Is laboring under a malarial affection.

February 4th.—The electricity has been regularly continued.

February 18th.—Until the 12th, felt no pain, and she thought that the tumor was diminishing; but she was then called upon to use the arm a good deal and for some days, and the pain has recurred, and is now as bad as ever, being of a stabbing character. Applied galvanism as before; pains all relieved in fifteen minutes.

February 20th.—Pain much relieved, but can not lie on the affected side. Applied galvanism.

February 26th.—Made application to-day, the second since last date. Can now lie on the affected side and has no pain.

March 1st.—Says she is all right.

March 8th.—Felt entirely relieved until the 5th, when, on making some unusual motion with the arm of the affected side, felt a sudden pain in the axilla, and the old pain in the tumor, in the arm, forearm, and hand returned. A séance of twenty

minutes relieved all pain, and she could not induce it by any motion of the arm. She has continued well, avoiding the causes which have produced the relapses.

CASE XVIII.—*Various Affections Relieved by the Faradaic Current.*—This was a woman suffering from intense “bilious colic,” her suffering being so great as to prevent her lying down, or taking any but very short inspirations; had also intense headache and constant vomiting. One electrode was applied to the lower dorsal region of spine, the other to the epigastrium. Almost immediately after the full strength of a Kidder’s electro-magnetic battery was applied, she could breathe easier. In eight minutes all abdominal pain was relieved. One pole was now shifted over the seventh cervical vertebra, and within ten minutes the headache and vomiting were entirely relieved.

CASE XIX.—*Herpes Zoster.*—This man met me in the street, May 29, 1874, complaining of a very severe pain over a spot the size of the palm, on the right side of the thorax. Over this spot is observed a roughness, and a slight redness. Diagnosed herpes and predicted vesiculation. The pain had commenced four days ago.

May 30th.—Can not endure the pain, and came to the office for relief. It is now a perfectly typical case; a perfect girdle of vesicular eruption two inches broad, extending from the median line in front precisely to the median line behind. The pain has not allowed him to sleep. Applied the galvanic current for eight minutes from the posterior end of the girdle to the painful spot on the side. Within four minutes the pain had disappeared; 12 to 18 cells. Patient was wonderfully pleased and astonished.

Evening.—Pain has returned. Dr. Murdock applied the battery, and relieved the pain in five minutes.

June 4th.—No pain for five days. It recurred last night, and is now worse than ever, in the same spot. Dr. M. applied the current for fourteen minutes. At the end of eight minutes, the pain was almost entirely relieved, and completely so at the termination of the séance. Has had no effect on the

eruption. I am now successfully applying it to another case. Both forms of electricity seem to relieve, but the galvanic is preferable. One electrode should be placed below and one put above the portion of the spine adjacent to the disease, as well as the painful points.

CASE XX.—M. II., a single lady, of uncertain age, of a very delicate and nervous organization, attacked suddenly last Spring with a burning sensation in the right foot, and the appearance of a circular, erythematous patch, the size of a half-dollar, on the instep. This was more painful than the rest of the foot. The discoloration disappeared at the end of three or four weeks, but the symptoms have rather increased; and there is a portion of integument on the inner side of instep, which is "numb." The pain has extended to the sole of the foot and a little up the leg, sometimes darting to the hip. She walks with difficulty, and can scarcely sleep at all, and sometimes not without sticking the foot out to avoid the pressure of the bed-clothes. Applied the interrupted current from a Gaiffe battery for twenty minutes. The painful symptoms were markedly relieved; the numbness much less so.

December 1, 1874, (Third Day After.)—Much less pain and numbness. Has slept the last two nights without difficulty; feels stronger also; repeat application.

December 19th.—No further treatment; was entirely free from pain until the past week; has walked more than usual; the pain is trifling, however. Applied the current again, with complete relief. The paralysis of sensation is not much better apparently.

Cases of Various Forms of Myalgia.—It is well known to most practitioners who make a frequent use of electricity, and to some who do not, that it is a specific against certain painful affections, commonly called muscular rheumatism, but which has received various designations from different authors; some of the latest writers still attributing it to neuralgia. But Anstie, in his "Neuralgia and the Diseases which Resemble it," clearly shows, I think, that it is not neuralgia, since it never follows

the course of any particular nerve. It has no affiliation to rheumatism whatever in its manifestations, its causes, or its effects. Since we do not understand its pathology, we may as well adopt Dr. Inman's term myalgia, as it signifies merely pain in the muscle, or rather in the tendinous and aponeurotic attachments of the muscle. Sometimes you may cover the painful spot, as a single attachment of one muscle, with the tip of the finger, sometimes with a half-dollar, and this, not seldom, leads to a wrong diagnosis with those who look for muscular pain. Spinal irritation, attributed by different authors to many different causes, is attributed by Inman to myalgia affecting the attachments of the erector spine muscles to the spinous processes; also the "backache" characteristic of the female sex of the present age, or the wearing pain, and dragging weakness over the upper part of the sacrum, is attributed by him to a strain on a weakened muscle in maintaining the erect posture, and consequent myalgia. This pain is often, no doubt, partially, and sometimes wholly due to this cause, though not generally; irritation of the sacral plexus from uterine disease being the important factor. The so-called "growing pains" of children are doubtless cases of myalgia, their weak muscles being overworked during the day by the undue amount of exercise to which they are subjected. Myalgia, in fact, is apt to be induced in all cases of overwork of a muscle in a normal condition, or when any work is exacted of a muscle imperfectly nourished, or sometimes when it is called upon to act at a disadvantage, as when one in perfect health stoops, and rises with severe lumbago, which may last for hours or days; the same thing happens to the muscles of the neck sometimes.

Two principal reasons impel me to ask your particular attention to the following cases of this disease. One is, that although every physician meets with and treats myalgia, under one name or another, as no uncommon affection, very few recognize the obscurer forms, which are constantly occurring under various circumstances, but often, as pointed out in Inman's excellent work, during the convalescence from tedious

or wasting disease, thus often causing unnecessary alarm, as well as inflicting no small amount of unnecessary suffering; it being almost always susceptible of prompt and permanent relief under appropriate treatment. Another reason is, that even the latest authors who describe the disease, scarcely allude to electricity as a remedy—not even Anstie. This is very remarkable, since the prompt, almost magical relief which induced electricity affords in the most violent cases is pretty generally known, and, to some extent, even among non-professional persons. In my own neighborhood there has been, during the past two years, an unusual prevalence of it, a sort of epidemic, and some of its most singular phases have fallen under my treatment. Many of these would scarcely have been recognized had they occurred singly. In Inman's work, almost every variety is described except one, of which I shall present three instances. This unusual prevalence was probably connected with the prevalence of malarious fever. It is of the greatest importance that we should be on the qui vive for this affection, both because it is so common and because its diagnosis will save our patients so much distress, and obtain for us so much *éclat*, since its relief is so easy of attainment, and perhaps after all sorts of remedies have been tried in vain. Since the remarkable results of the galvanic or constant current in the relief of pain, and in the cure of a great variety of diseases, have become known through Remak and his followers, Duchenne's important labors have somewhat been thrown into the shade, and the Profession have been disposed to place less reliance on the induced or interrupted or Faradaic current. A reviewer of Althaus's in a late number of the "London Medical Times and Gazette" thus speaks of it: "Though Faradization is not without its uses, these seem in the meantime to be—perhaps from the reaction of opinion—somewhat under eclipse, but if any one wishes to read a glorification of this mode of applying electricity to the cure of disease, let him peruse Duchenne's great work; which might almost be described as a work for the laudation of interrupted electricity."

These are the terms in which we constantly hear and see electrical treatment referred to by high authorities, in other matters, but by men who have had little personal experience evidently in the startling and seemingly incredible results of both forms of electricity. For the relief of myalgia, however, especially as it affects the more superficial muscles, any, in fact, but the deepest seated muscles, I have found faradization, locally applied, more prompt and effectual than galvanization. Meyer recommends that we should use the metallic electrodes here, and even the metallic brush, or electric moxa. Following him, I did so in my first essays, but it is painful, especially the brush, and I do not think any more effectual than the wet electrodes, which are rather pleasant when properly graduated. G. Vivian Poore, the latest writer on the subject, in his lectures published in the "London Lancet" for 1874, recommends, in certain cases, that, while the electrodes are applied, the affected muscles should be kept in action. When the affection is chronic, and when a certain amount of rigidity exists, this may be worthy of trial, when some improvement does not follow the first or second trial. When the affection seems to be undoubtedly muscular, and the wet electrodes fail, which will be very rare, it is well to try the metallic disk or brush, and, when faradization fails, to try the galvanic current from a large number of cells. The latter will, now and then, give permanent relief, when the relief from the former is only temporary. Besides, the failure of the interrupted current is a strong argument against the existence of myalgia, and the pain, being more deeply seated, or congestive, the galvanic is the proper current, as it passes more deeply into the tissues and organs of the body than the Faradaic.

CASE XXI.—G. M., aged fifty-five. I introduce this case first, because it illustrates what has just been said about the two forms of electricity in myalgia, and some of the minor difficulty in diagnosis. I was called to him about a week ago; he had then been ailing and confined to his room for some days with slight fever; malaise; cough; but principally pain in

right side of thorax, shooting up to shoulder; almost complete inability to help himself in any way, and to draw a full breath; symptoms clearly resembling those of pleuritis; physical examination failed to detect any thoracic disease; and the pulse was not accelerated; the temperature 102° . When muscular rheumatism accompanies the development of thoracic disease, as it not unfrequently does, and the inspirations are thereby rendered so shallow as to make it difficult to catch abnormal sounds on auscultation, it is easy to make a wrong diagnosis and to give a too favorable prognosis. The battery usually settles the matter at once by removing promptly the muscular complication. I gave a hypodermic injection of morphia, having no battery at hand, and a solution of morphia to be taken *pro re nata*. The following day he was no better, and I applied the interrupted current from Gaiffe's battery. The pain had, however, shifted somewhat, and had settled fiercely in the shoulder. The pain in the side was very much relieved, so that he could get up and down, and walk about with but little difficulty. The pain in the shoulder was not so much affected. I also ordered a full dose of quinine, twenty-two grains. The next day, although the temperature was much lower, the pain was as bad as ever, and I requested Dr. J. C. Young to apply the galvanic current, which he did from twenty-four cells, and with almost complete relief. This has continued permanent.

CASE XXII.—This case occurred yesterday, December 21. The patient is a lawyer, young, and enjoying excellent health, except a little dyspepsia and nervousness now and then from sedentary habits. Attacked rather suddenly in the morning with severe pains in upper part of back, shoulders, across chest, and down the arms; a feeling of oppressive weight at epigastrium; dull heavy feeling in head; pains shooting occasionally across temples, and nausea now and then, with considerable alarm. He could not move without great pain. Pulse normal, temperature 102° . Feeling of great chilliness although roasting before a hot fire. The pain was so general that he could not locate it in any particular muscle. I applied one of the

wet electrodes of a Faradaic battery of the Galvano Faradaic Company's make to the seventh cervical vertebra and below it, the other in succession to points from this spot to middle of right arm. In three minutes, by watch, the patient was surprised to find the suffering wonderfully better, for he had not attached much faith to this mode of treatment. The second electrode was then moved across the pectoral muscle, and to left shoulder and arm, and in eight minutes he was free from all pain on motion, except the head; a very mild current was then passed over the scalp and temples, and the head symptoms were almost entirely relieved. He was ordered twelve grains of quinine and ten minims of elixir McMunn. One hour and a half after, during which time he slept, the same symptoms recurred, if possible, worse than ever, for the pain was so severe as to induce vomiting. I now considered that the affection was probably confined to the trapezius muscle, and that the recurrence was due to the fact that the current was applied to only a small portion of the muscle. I accordingly commenced at its occipital attachment, passed down the spine to its lowest limit, then over the scapulæ (then touching the middle of this region, on either side, nausea was induced), then over the clavicle, deltoid, biceps, etc. The relief was as prompt as before. The superficial pain of the head was also relieved by application to the occipito-frontalis. The séance in both cases lasted half an hour. To-day, find patient entirely free from pain, temperature $100\frac{1}{2}^{\circ}$; says, in the night, when changing his position, he felt a slight twinge here and there.

December 24th.—Although his temperature keeps rather high (102°), has had no pain. ◀

This muscle is very prone to myalgia, and frequently the pain is confined to only small portions, and owing to its cranial attachment, causes headache, which spreads from this muscle over the occipito-frontalis, and thus is apt to lead one astray. When one attachment of the muscle, or of any muscle, is affected, it is, therefore, better to pass the current through every portion of it. The general malaise, cerebral and gastric

symptoms accompanying these affections, and especially the myalgia of the trapezius, appear to be due to something more than the effect of severe pain, and is possibly attributable, in the case of this muscle, to the fact that the spinal accessory nerve is freely distributed to it, and also freely communicates with the pneumogastric nerve, though generally considered only motor in its influence.

CASE XXIII.—*Cases of Myalgia Affecting a Very Limited Locality.*—Mr. B., a young mechanic, in excellent health, came to my office January 11, 1874, much alarmed on account of a most intense pain in the head, which, from its character, he supposed to indicate cerebral disease, and from its sudden and unprovoked attack. He said he arose as well as ever, and on going to the breakfast table, was attacked first with a pain at a small spot in the centre of his spine, which was quickly transferred to an equally small spot at the back of the occiput; but, as the pain increased, it gradually spread over the top of the head. I immediately recognized it as myalgia commencing in the lowest attachment of the trapezius, and passing to the highest, thence spreading over the occipito-frontalis. On questioning him as to what he did after dressing, he said, nothing, except to use his dumb-bells, as he did daily. Here was a clue then to the trouble. I predicted that he would be relieved in a few minutes. Applied the Faradaic current from a Kidder battery, wet electrode to the head, metallic disk to the back of neck. In two minutes and a half, by the watch, the pain was all gone, and there was no recurrence.

CASE XXIV.—Mr. M., a stout, healthy farmer, addicted to no bad habits except occasional attacks of intermittent fever, came into the office July 24, 1874, complaining of what he called colic. The pain, which is confined to a spot not larger than the hand, just below the epigastrium, commenced suddenly this morning, and has continued all day. It is not severe enough for colic, and on bending his body in different directions, it is rather increased. Faradization for ten minutes

completely and permanently relieved him, and settled the diagnosis.

CASE XXV.—A young and healthy man came in September 8, 1874, with a pain in left side of thorax, incapacitating him for work, for walking in the erect position, or even standing erect. Has existed for several days. Applied the induced current for about fifteen minutes with the wire-brush; complete relief and no recurrence.

CASE XXVI.—John F., a stout, muscular man, came in September 10, 1874, with a most severe pain over a spot not larger than a two-cent piece, just below the lower border of the left pectoralis major muscle, preventing work. Faradization with the wire-brush for fifteen minutes. Patient much astonished on being made to go through with various gymnastics with his affected arm, to find himself without pain or inconvenience.

December 13th—Three Months After.—Has been perfectly well since application until three days ago, when he was attacked in precisely the same manner. In ten minutes the same treatment drove the pain to a spot a little higher, and five minutes longer relieved him entirely. This shifting of the pain, under the influence of the current, is not uncommon, sometimes it has to be driven from point to point until it is finally vanquished.

CASE XXVII.—*Cases of Myalgia of the Tongue and its Muscles, Affecting Speech and Deglutition.*—J. A., a stout man, in excellent health, except a slight malarial attack now and then, came into the office April 6, 1874, articulating with great difficulty, but able to give the following account of himself: That while eating his breakfast, with a good appetite, he felt a difficulty in moving the morsel, which he had chewed, back into the fauces, his tongue refusing to perform this duty, and also became affected with a sharp pain "at its root." There was nothing abnormal in the appearance of the member, and no pain on pressure, except on pressing deeply on either side of the os hyoides, principally on the right side. By exclusion I diagnosed myalgia, and requested Dr. Murdock to apply the galvanic current to these two points. In a few minutes he

expressed himself as relieved. But, a few hours later, a message was sent to say that he was much worse. Dr. M. saw him. All the muscles attached to the hyoid bone seemed now to be more or less affected. The whole tongue was very painful on pressure to the very tip; he shrank some from the approach of the finger to it; it is also decidedly swollen. Soon after leaving the office, he had a regular chill, with nausea and vomiting, followed by fever. Dr. M. applied an electrode of the galvanic (primary or constant current) battery over the sub occipital region, and making an electrode of a silver spoon wrapped in wet cloth, he attached this and applied it as far back on the base of the tongue as possible; then from either side of the os hyoides to the tongue, for thirty minutes. The pain was almost entirely relieved. He also injected six grains of quinine hypodermically in the arm. It should have been mentioned that one of his greatest annoyances was a great accumulation of mucus in his throat, and the difficulty in getting it up or down.

April 7th.—Pain not so severe, and confined to the left side of the tongue; can swallow very little food though very hungry. Electricity applied in the same manner with almost complete relief.

April 8th.—To-day slight soreness on pressure on the left side of the tongue towards the base, and on pressure, and also in swallowing, over the hyoid bone on left side. But he swallows soft nourishment pretty well, and feels almost well.

April 9th.—Scarcely any traces of his trouble. No recurrence.

CASE XXVIII.—Mr. C., farmer, a delicate and over-worked man, who has suffered more or less from malaria for a year, though travelling about the country a good deal, sent for me August 30, 1874, in a great hurry, with the message that he was choking to death. Last night was attacked with what he calls a cramp in the right thigh, which subsided, but causes a halt in his gait today. Was eating his dinner, or had but just commenced, with a good appetite, when he suddenly found that his tongue refused to assist him in deglutition. Then pain of a

severe character attacked the base of the tongue, and soon extended to the parts below the base of the lower jaw, all around from angle to angle; he soon lost all power of articulating distinctly, and could swallow nothing, and thought he would choke with the mucous accumulation. He was in this condition when I saw him; his tongue felt to him as if greatly swollen, but it was not at all so. The tongue and fauces appeared perfectly healthy; rather pale; pressure towards the base of the tongue very painful. Externally the principal pain on pressure was over the posterior portion of the os hyoides, on the right side; just behind the *symphysis menti* it was again severe; that is, at the attachment of the genio glossus and genio hyoglossus; head hot; extremities cold; patient feels very chilly, although the day is warm; pulse 100, small and feeble; temperature 102° ; drowsy. His suffering, mental and physical, was so great that I gave him, at once, a hypodermic injection of morphia, one-third of a grain. Finding that, after an interval of twenty minutes, he got no relief, I commenced the application of the induced (Faradaic) current, pressing the wet electrodes as firmly as he could bear over the painful parts on either side externally, and then from the nape to these parts. In ten minutes he could articulate with considerable distinctness, and in twenty minutes he was considerably relieved of pain, and could swallow with pain and by a great effort. Believing that the deeper parts could only be effectually reached by the galvanic current, I left with the promise to return the following day and apply it.

August 31st.—The relief lasted only a few hours, and he is to-day suffering from the same symptoms, if possible, in a more aggravated degree. Pulse 90, small and feeble; tongue now decidedly swollen, soft and pale; the tenderness has now extended to the lips; the mucus troubles him very much; he is very drowsy; temperature 102° ; can not articulate a word, and can swallow nothing. Complains of pain behind the left trochanter increased by pressure over the sciatic nerve; also of some pain about the muscles of the left shoulder. Applied the wet electrode of a zinc carbon battery to the affected parts

externally for ten minutes with considerable relief as far as articulation was concerned, and with some relief to pain. Applied then one electrode to the nape, and a suitable one to the base of the tongue, or as far back in the mouth as possible; used seven to nine cells only. Application twenty minutes to the tongue. Could articulate better, but could swallow very little better. It was accordingly reëplied to the external parts, increasing the number of cells to eighteen, and then to twenty-four. Finding that the improvement, though decided, was not satisfactory, I applied the Faradaic current first to the external parts, and then to the tongue itself for ten minutes. Improvement less than from the galvanic. After the whole séance, which lasted over an hour, the patient swallowed two large cupsfull of thick gruel without much pain, and could articulate quite distinctly, notwithstanding the swollen condition of the tongue, nor was he so much annoyed by mucus. His drowsiness was remarkable, falling asleep while sitting up and while the electrode was on his tongue. Ordered beef-tea, brandy, etc., freely, and gave hypodermic injection of quinine.

September 1st.—Although his temperature has risen to 103° , and he is no better in other respects, his tongue and throat symptoms have entirely disappeared. They did not recur.

CASE XXIX.—W. D. G., a gentleman doing business in New York, was attacked suddenly, while walking in the lower part of the city, with deep-seated pain in the cervical spine and excessive pain in attempting to talk or to swallow; no other symptoms. He got to his place of business with some difficulty, and immediately telegraphed me to meet him at his residence in the country. Not being able to go, Dr. Murdock saw him; found him free from fever, pulse good, skin pleasant. Could rotate his head without pain, but any attempt to change his position in bed induced severe suffering. Pain seemed to be confined to the line of the spinous processes, and a little to either side. Deep pressure over the spine behind and in front produced more pain than on the sides. Attempts at deglutition caused a pain passing from the front of the neck to the

back, "as if the top of the head was being lifted off." Dr. M. could not arrive at a positive diagnosis, but thought the fibrous tissues about the vertebral column might be affected by inflammation. Gave a hypodermic injection of morphia, and a solution to be taken for pain *pro re nata*.

April 3d.—I saw him to-day. The pain recurred about an hour after the injection, and, though he took the anodyne through the night, it only made him "wild," and gave no relief. Talking and swallowing still more painful. My suspicions are confirmed. The pain has extended to the trapezius muscle, the deep muscles at the nape, and the left scapula. I had no battery with me, and I therefore requested Dr. Murdock to visit him in the afternoon and apply the Faradaic current. He did so, with the effect of relieving all the symptoms except the pain on swallowing, which was mitigated; talking was not painful.

April 4th.—The pains in the external parts have returned in a mitigated degree; the scapula is free from pain; but the pain on talking, and especially on swallowing, is very severe. Applied the Faradaic current for twenty minutes, wet electrodes to nape, metallic disk to front of neck. The muscular pains were entirely relieved and the pain in talking, but that on swallowing is no better. The pharyngeal muscles are doubtless affected. *R*.—Potass. Iodid., grs. v., q. 3 h.

April 5th.—The relief obtained yesterday has been permanent; could not take much of the medicine; deglutition is so difficult that he can not take nutriment enough to sustain his strength, and he is excessively depressed. I suggested the galvanic electricity in place of the Faradaic, and Dr. M. applied it, placing an electrode on the neck, the other between the sterno-mastoid and trachea, pressing as deeply as possible. While the current was passing, he could immediately swallow without difficulty, and advantage was taken of this to get him to take a dose of quinine and some beef-tea. On removing the sponge, the pain would return, but in a milder degree. After a séance of twenty-five minutes, there was no return.

April 7th.—To-day, received the following note: "I am so

relieved of my throat trouble as to be able to eat anything, all pains have stopped, and only a soreness of the limbs remains. I shall, if all goes well, go to my business to-morrow morning." And he did so. It would seem that the Faradaic current did not extend deep enough to reach the pharyngeal muscles. It would also seem that, without the aid of electricity, these cases could not have been relieved; even the hypodermic injection of morphia failing.

CASE XXX.—P. K., a rather feeble man of fifty-five, fell across a lathe in the foundry, injuring seriously the whole of the lower ribs on the right side, fracturing at least two of them. He suffered a great deal for a week, only partially relieved by a body bandage, and afterwards by a double broad band of adhesive plaster extending quite around the chest, and drawn very tightly. It is now April 21, 1874, five weeks since the injury, and he has severe pain in breathing, but especially in coughing, sneezing, etc. The pain is now quite severe at two points on the *abdomen*, below and inside of the false ribs, and these points are very tender on pressure. Moving his right arm or turning in his chair increases the pain. Applied the galvanic current of a Stöhrer battery, first with twelve, then with sixteen cells. Within six minutes he could draw a comfortable breath for the first time, and as the current passed, he drew breath after breath, increasing the depth of the inspirations apparently with the greatest satisfaction. In another five minutes he expressed himself as feeling "like a different man." Not even on coughing did the pain recur. On rising, however, and moving his body from side to side, he discovered some painful points, and the electrodes were applied as indicated. The pain, as is often the case, was driven, as it were, from above downwards until it had arrived nearly at the pubes, leaving one spot to attack another, until after the lapse of twenty-five minutes all pain on any motion or position of the body had disappeared. May 17th (over three weeks since last date) no return of pain sufficient to call for interference.

CASE XXXI.—Mrs. R., aged seventy-three years, a feeble old lady, who is frequently sick with what she calls dyspeptic and bilious symptoms, was attacked rather suddenly August 19, 1874, with vomiting, epigastric pain, debility, etc. Dr. Murdock, who saw her, prescribed quinine. The following day I was sent for hurriedly to see her, and found her suffering intensely, and very feeble, and very much jaundiced. She was nauseated, and had the most severe pains across the scapulae and in the epigastrium, breathing and movement of any kind gave her great pain. I applied the wet electrodes of a Gaiffe's induction battery across the back over the seat of pain, and the relief was almost immediate; after a few minutes it was applied from the spine to the epigastrium, and very soon all her pains were relieved, and she could lie easily in any position. There was no recurrence.

Chronic Myalgia.—Myalgia is very generally an acute affection, but it frequently assumes the chronic form if not recognized and treated. There is a form which comes on very slowly, almost imperceptibly, around the joints, which I have not seen noticed, and is very apt to lead to a suspicion of disease in the joint, or of the periosteum covering the articular extremities of the bones. If it affects the knee-joint in a child, it may be mistaken for disease of the hip-joint, as there is also slight lameness from the pain. In a case now under observation, the first sensation was of soreness on pressure over the internal condyle of the right os brachii; this remained in that locality for perhaps two weeks, then very gradually spread around to the external condyle, and finally to the other parts about the joint not well cushioned by muscles. It was worse on waking in the morning, and on some days than on others. Both currents of electricity relieved the pain almost entirely (it was never severe), but the patient neglected to apply regularly, and only came again when the pain threatened to increase, and on being partially relieved, did not apply again for a week or two. It has now existed for several months, but is only a very trifling annoyance to him at present.

CASE XXXII.—*Cases of Chronic Myalgia*.—Mr. A. W., aged fifty-one, in good health except a soreness and chill, roaring sort of pain just around the lower border of the ribs and over the epigastrium. Does not feel it so much when walking about the house, or while at work (he is a house-painter) as when he sits still, especially when writing. He has had it more or less for several years, but it is latterly increasing, and seeing the benefit of the electricity in his wife's case (localized galvanization for severe and chronic uterine pains), he desired a trial. There is no other evidence than the pain of lead poison. Applied the Faradaic current April 26, 1874. At the end of fifteen minutes, most of the pain had disappeared, that over the epigastrium being the most obstinate. At the end of half an hour, he was perfectly free from all pain, and could not induce it by any movement. May 14th, eighteen days after, the pain has not recurred at all in the old localities, but the day after the application returned, to a moderate extent, at a higher point; it soon disappeared, and it has not since troubled him but in a trifling degree.

CASE XXXIII.—Mr. E., for twenty-six years a conductor on the Hudson River railroad, for several years has been annoyed by occasional pains in the sacrum, resembling the woman's backache. It has constantly increased, until it now troubles him almost all the time, especially in stooping. It extends also now around the hips, and now and then down the thighs; otherwise, he is in excellent health. He states that it is a common affection among conductors, and one may well imagine that their occupation is just the one to induce myalgia of this part. Applied the primary or galvanic current, commencing with twenty-four cells, but as the current became too strong, reduced it to eighteen. In fifteen minutes the pain was all gone; he could not bring it on by any movement.

April 26, 1874, the day after the application, very slight pain in the hips, none at all in the thighs. Applied the same current for fifteen minutes, all pain had then disappeared.

June 1st.—Has had no further trouble sufficient to require any treatment.

CASE XXXIV.—This is the wife of Case XXII. Mrs. C. F., a healthy lady of thirty-seven or eight years. For more than two years has suffered from pain and soreness on pressure, or on any motion of the head, over a space extending from the seventh cervical vertebra to the base of the skull, and affecting the muscles attached to the occiput, on either side of the spinous process. The pain over the vertebra prominens has been such that even the pressure of her dress has always been uncomfortable. When the soreness is greatest, it passes up over the occiput above the protuberance. It is frequently so severe as to induce a nausea and faintness. She has never had any relief except from painting it with strong uncture of iodine, and now this fails her. Has also hypogastric pains, and as she has formerly been under treatment for uterine congestion, they may be exerting some influence. Applied the galvanic current April 9, 1871, twelve to sixteen cells, from the neck to the hypogastrium. A séance of twenty-five minutes relieved all pain.

April 11th.—Was relieved for twenty four hours; the pain then returned for three hours quite severely. The pain in the vertebra prominens, the most troublesome spot, did not recur, and there is only moderate pain anywhere. Applied the same current for twenty minutes, when all soreness was relieved.

April 15th.—Very much better; no pain anywhere until this afternoon, when it recurred, to a slight extent, in the deep muscles of the nape, on either side of their insertion in the skull. Applied the current to these parts; could only bear ten to twelve cells.

April 16th.—On the day succeeding the last application, had a severe pain in the sides of the neck, but none where it has always been most troublesome; but it may be, in part, due to a severe sick headache, to which she is subject. Applied the current from twelve cells from the nape to the temples, and from one temple to the other, with great relief to the headache; then across the neck, with relief to the pain there.

April 21st.—The headache did not recur after the séance, and the other pains have almost entirely disappeared. Applied the Faradaic current for fifteen minutes, to finish up the treatment. Until this date, December 20, 1874, the pains have not recurred.

CASE XXXV.—Mr. W., a man somewhat addicted to the bottle, but not to any extent for some months, has suffered at times terribly from dyspepsia, urinary difficulty, etc. For nine years he had a dull pain in the left side of the thorax anteriorly, and for nine months a constant pain on both sides, quite sharp at times; and, after walking up hill, spreading to middle of the sternum, where it is quite painful. Is now well, he says, in other respects. Applied the Faradaic current to-day, March 26, 1874, for twenty minutes, from one side to the other, with the effect of giving him almost complete relief.

March 27th.—No pain all night; has now pain in left side and under the sternum, none on right side (that last attacked). The pain is, however, less severe; has also, he says now, had a "numbness and weakness" in the left upper extremity for a year past, only felt when he is idle, or at night. The current relieved the pain in the breast in six minutes, and in five minutes that in the sternum also, so that a forced inspiration could not induce it. Applied the current to left arm and forearm.

April 2d.—Have not happened to be in the office when the patient called since last date. Dr. Murdock applied the Faradaic current, and as the pain recurred to some extent, substituted the galvanic current, twenty to twenty-four cells, with relief.

April 4th.—The pains now trouble him but very little. He says that after the Faradaic current was applied to the upper extremity, the pain was worse there than it had ever been; but it is now better. Applied the galvanic current, twenty-four cells, to painful parts and to the arm.

April 5th.—No pain; arm better. Repeat application.

April 7th.—Arm much better. Repeat.

April 18th.—On the 14th, came in complaining of a slight

pain below the original seat; arm was better. Dr. M. applied the battery. To-night, has still some of this pain remaining; arm still steadily improving. Applied galvanization with complete relief, and from this date he required no further treatment.

The two following cases, occurring in the persons of mother and daughter, illustrate the superiority of the galvanic over the Faradaic current:

CASE XXXVI.—Miss L. DeR.; patient has been very ill for several months with thoracic disease, and is much reduced in strength and greatly emaciated, was improving very much, and being over ambitious in walking, two weeks ago, was attacked with pains around the knee-joints, and with severe pains, on slight pressure, over several of the spinous processes of the upper dorsal vertebræ. It is impossible for her to lean back in a chair, and her mother endeavored to contrive a sort of saddle-pillow or cushion, so as to relieve the spinous processes of pressure, and thus enable her to relieve herself by leaning back when sitting. When sitting, it was with considerable difficulty and pain that she arose, and her gait was that of an extremely old woman. The trouble was evidently myalgia, induced by ordinary exercise in muscles not sufficiently nourished. Finding liniments, frictions, etc., unavailing, and the trouble increasing, notwithstanding several days of complete rest, to-day, August 1, 1874, I applied the Faradaic current for over half an hour, with no appreciable effect.

August 2d.—Applied the galvanic current, with no immediate effect.

August 3d.—Thinks she is a little better, and sends for me to try again. Repeat application to spine and knees.

August 4th.—Decidedly better. Repeat.

August 5th.—Pains have almost entirely disappeared. Repeat.

August 12th.—No return of soreness, and she walks as much as she feels inclined.

CASE XXXVII.—Mrs. DeR.; patient is not in good health, and over exerted herself yesterday, August 12th, in the city

while shopping. Was attacked suddenly to-day with what she calls lumbago; but the pain is confined to the tendinous expansions of the erector spinæ muscle between the sacro-iliac joints. She can scarcely get about, and only with great pain; wishes to set out for Saratoga with her invalid daughter to-morrow, and is anxious for speedy relief. Applied the Faradaic current, but with only moderate relief. Being engaged in the afternoon, I desired Dr. J. C. Young, then of Bellevue Hospital, to apply the galvanic current for me, which he did, with complete relief. She set out on her journey, and had no further trouble.

This paper has become so extended, that I am compelled to omit some very striking cases of rapid relief following the use of the induced or interrupted current. When the diagnosis is correct, failure to obtain complete and permanent, sometimes almost instantaneous relief, is rare, which is the more important, as, in these very cases, the action of all other remedies, even of the hypodermic injection of anodynes, is very uncertain, very slow, and not so likely to be permanent.

Allusion has been made as to the probable connection of the unusual prevalence of myalgia with that of malaria. But this connection is of sufficient importance to merit more than a passing allusion. Malarious myalgia does not differ in its symptomatology from its other forms. The immediate effect of electricity is the same, but the pain is more prone to recur again and again, though often in a mitigated degree; sometimes, however, in an aggravated form. When malarious fever is prevailing, this recurrence should at once attract attention, and quinine should be administered in a full dose night or morning, when the pain will usually disappear until the malarious element again gathers strength; but quinine alone will not cure the myalgia. Whether it is possible to trace any malarious complication or not, if the pain is clearly myalgic, and neither form of electricity will afford permanent relief, full doses of quinine should be exhibited.

